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Subsoil Moisture Levels for 2004

Abstract

Each spring and fall, a soil moisture survey is conducted to determine the amount of plant-available water (PAW) in the top five feet of the major soils in Iowa. Adequate soil moisture reserves increase the probability of average or above-average crop yields in the following season. Producers may use this information to alter their crop management plans according to expected soil moisture levels. Several sampling sites are located at the Western Research and Demonstration Farm.

Disciplines

Agricultural Science | Agriculture

Subsoil Moisture Levels for 2004

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Introduction

Each spring and fall, a soil moisture survey is conducted to determine the amount of plant-available water (PAW) in the top five feet of the major soils in Iowa. Adequate soil moisture reserves increase the probability of average or above-average crop yields in the following season. Producers may use this information to alter their crop management plans according to expected soil moisture levels. Several sampling sites are located at the Western Research and Demonstration Farm.

Results and Discussion

West-central Iowa began the cropping season with very good soil moisture conditions, the area's soils holding an average 8.5 inches of PAW, which was 73% of capacity. Precipitation was mostly adequate through early July, but then became short from late July through September in many areas. Yet because of the below-normal temperatures, crop demand on soil moisture was less and moisture stress was not a problem in most areas. Late-summer and early-fall precipitation recharged soil moisture in Ida, Sac, and Pocahontas counties.

Spring soil moisture status. Most soils in west-central Iowa benefited from a tremendous

recharge in soil moisture following the dry conditions that the area experienced in the fall of 2003. The area's soils were holding an average of 8.5 inches of PAW, which is 73% of capacity. This compares to only 2.6 inches of PAW for the previous fall and 8.6 inches of PAW for the spring of 2003. The 6-year spring sampling average is 7.9 inches PAW, or 93% of the spring's amount.

Areas with greater than 8 inches of PAW included Carroll (9.6 inches), Ida (8.9 inches), Sac (10.2 inches), and Pocahontas (8.1 inches) counties. Monona (6 inches PAW) and Crawford (7.5 inches PAW) counties, although only at 51% and 65% capacity, respectively, had their best spring soil moisture conditions since the spring of 1999.

Fall soil moisture status. Results from the soil moisture survey taken in late October indicated that west-central Iowa had an average 5.0 inches of PAW in the 60-inch soil profile, or 43% of capacity. This was 108% of the last 6-year fall average and much above the previous fall's total of 2.6 inches PAW. Soils with the most stored moisture were found in Carroll, Sac, Pocahontas and northern Ida counties with an average of 7.9 inches PAW. In contrast, Calhoun, Crawford, and Monona county soils were holding only 2.6 inches of PAW.

Table 1. Spring and fall 2003 subsoil moisture.

| County | Spring PAW* | % of Capacity | Fall PAW* | % of Capacity |
|------------|-------------|---------------|-----------|---------------|
| | inches | | inches | |
| Crawford | 7.5 | 64.5 | 3.3 | 28.3 |
| Monona | 6.0 | 51.1 | 1.9 | 16.6 |
| Ida | 8.9 | 73.3 | 5.6 | 45.6 |
| Woodbury | 6.5 | - | 4.6 | - |
| Carroll | 9.6 | 77.3 | 7.1 | 57.1 |
| Sac | 10.2 | 88.1 | 6.9 | 60.3 |
| Pocahontas | 8.1 | 73.4 | 7.4 | 66.6 |
| Calhoun | 6.9 | 62.5 | 2.7 | 24.8 |

*PAW = Plant Available Water

Spring sampling date = April 02, 2004; Fall sampling date = October 27, 2004

Sampling depth = 60 inches